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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,647	09/17/2003	Jindrich Houzvicka	H0610.0351/P351	3795

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EXAMINER	
BOYER, RANDY	
ART UNIT	PAPER NUMBER
1797	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/663,647	HOUZVICKA ET AL.	
	Examiner	Art Unit	
	RANDY BOYER	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☒ Claim(s) *1,4 and 5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 April 2008 has been entered.

Response to Amendment

2. Examiner acknowledges Applicant's response filed 17 April 2008 containing remarks.

3. Claims 1-5 are pending.

4. The previous rejections of claims 1-3 and 5 under 35 U.S.C. 102(b) are maintained. Likewise, the previous rejections of claims 2 and 4 under 35 U.S.C. 103(a) are maintained. Finally, new grounds for rejection of claims 1-5 are entered under 35 U.S.C. 103(a).

5. Finally, objection is made with respect to claims 1, 4, and 5. The objections and rejections follow.

Claim Objections

6. Claims 1, 4, and 5 are objected to for apparent misspelling in the claim language.

7. With respect to claims 1, 4, and 5, the word "Groupoup" should be changed to "Group". Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Hollstein (US 4,956,519).

10. With respect to claim 1, Hollstein discloses a process for the production of high-octane gasoline from a hydrocarbon feed stream with C_{4+} hydrocarbons cuts (see Hollstein, Abstract; column 3, lines 67-68; and column 4, lines 1-7) comprising contacting the feed under isomerization conditions with a catalyst composition comprising mixed aluminum and zirconium oxides modified with tungsten oxyanion and hydrogenation/dehydrogenation component of a Group VIII metal (see Hollstein,

Abstract; column 2, lines 50-68; column 3, lines 1-11, 28-31, and 67-68; and column 4, lines 1-29).

11. With respect to claim 2, Hollstein discloses wherein the hydrocarbon feed is heptane (see Hollstein, column 3, lines 67-68; and column 4, lines 1-5).

12. With respect to claim 3, Hollstein discloses wherein the isomerization conditions comprise presence of hydrogen (see Hollstein, column 4, lines 21-23) with a hydrogen to hydrocarbon ratio between 0.1 to 5 (see Hollstein, column 4, lines 23-25), a temperature range from 15°C to 300°C, a total pressure of between 1 and 40 bar (see Hollstein, column 4, lines 8-12) and a liquid space velocity LHSV of between 0.1 to 30 h^{-1} (see Hollstein, Table I).

13. With respect to claim 5, Hollstein discloses wherein the Group VIII metal is platinum and/or palladium in an amount less than 5% (see Hollstein, column 2, lines 58-63; and column 3, lines 8-11).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hollstein (US 4,956,519).

18. With respect to claim 2, Hollstein discloses a process for the production of high-octane gasoline from a hydrocarbon feed stream with C_{4+} hydrocarbons cuts (see Hollstein, Abstract; column 3, lines 67-68; and column 4, lines 1-7) comprising contacting the feed under isomerization conditions with a catalyst composition comprising mixed aluminum and zirconium oxides modified with tungsten oxyanion and hydrogenation/dehydrogenation component of a Group VIII metal (see Hollstein,

Abstract; column 2, lines 50-68; column 3, lines 1-11, 28-31, and 67-68; and column 4, lines 1-29).

Hollstein does not disclose wherein the hydrocarbon feed contains at least 20 wt% of C_{7+} hydrocarbons.

However, Hollstein discloses wherein the hydrocarbon feed is heptane (see Hollstein, column 3, lines 67-68; and column 4, lines 1-2).

Therefore, it would have been obvious to the person having ordinary skill in the art at the time the invention was made to provide a feed containing at least 20 wt% of C_{7+} hydrocarbons.

19. With respect to claim 4, Hollstein discloses wherein the catalyst comprises a major amount of Group III and Group IV metal oxides (e.g. aluminum oxide and zirconia), with lesser amounts of a Group VI oxide (e.g. tungsten oxide) and Group VIII metal (e.g. platinum and/or palladium) (see Hollstein, column 2, lines 50-68; column 3, lines 1-31; and Tables 1 and 2).

20. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (US 6,080,904) in view of Yori (J. C. Yori et al., *Isomerization of n-Butane on Pt/SO_4^{2-}-ZrO_2 and Mechanical Mixtures of Pt/Al_2O_3 + SO_4^{2-}-ZrO_2*, 153 J. CATAL. 218-223 (1995)).

21. With respect to claims 1-5, Chang discloses a process for the production of high-octane gasoline (see Chang, column 1, lines 19-27; and column 6, lines 35-39) from a hydrocarbon feed stream with C_{4+} hydrocarbons cuts (see Chang, column 6, lines 1-2) comprising contacting the feed under isomerization conditions with a catalyst

composition consisting of zirconium oxide modified with tungsten oxyanion and hydrogenation component of a Group VIII metal (see Chang, Abstract); wherein the hydrocarbon feed may be a pure paraffin feed having between 4 and 8 carbons (for example, C_7 (heptane)) (see Chang, column 7, lines 1-21); wherein the isomerization conditions comprise presence of hydrogen with a hydrogen to hydrocarbon molar ratio between 0.1 to 5 (see Chang, column 7, lines 21-44), a temperature range from 150°C to 300°C (see Chang, column 7, lines 21-44), a total pressure of between 1 and 40 bar (see Chang, column 7, lines 21-44), and a liquid space velocity of between 0.1 to 30 h^{-1} (see Chang, column 7, lines 21-44); wherein the catalyst composition may comprise 10-50 wt% tungsten oxide (see Chang, Example 2), with a remaining amount comprising zirconia and Group VIII metal (see Chang, Example 2); and wherein the Group VIII metal is platinum and/or palladium in an amount of between 0.01 wt% to 5 wt% (see Chang, Example 2).

Chang does not explicitly disclose wherein the catalyst consists of a mixture of aluminum and zirconium oxides modified with tungsten oxyanion.

However, Yori discloses a platinum-based zirconium oxide catalyst for use in the hydroisomerization of n-butane to produce higher octane species (see Yori, page 218). Yori explains that when a platinum-based aluminum oxide catalyst is mechanically mixed together with the platinum-based zirconium oxide catalyst to form a composite catalyst composition consisting of both aluminum and zirconium oxides, the result is a catalyst composition having increased stability and sustained catalyst activation (see Yori, page 222).

Therefore, the person having ordinary skill in the art of processes for the production of high-octane gasolines would have been motivated to incorporate use of aluminum oxides in the platinum-based zirconium oxide catalyst of Chang (as taught by Yori) in order to achieve a catalyst composition having increased stability and sustained catalyst activation.

Finally, the person having ordinary skill in the art of processes for the production of high-octane gasolines would have had a reasonable expectation of success in incorporating use of aluminum oxides in the catalyst composition of Chang because: (1) both Chang and Yori are directed to processes for the hydroisomerization of C_{4+} hydrocarbon feeds to produce higher octane species; (2) the catalysts of both Chang and Yori are zirconium oxide based catalysts; and (3) Chang explicitly notes the possibility for introducing additional catalyst constituents such as metal oxides (e.g. the aluminum oxides of Yori) into his catalyst (see Chang, column 6, lines 20-27).

22. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (S. Zhang et al., *Anion-Modified Zirconia: Effect of Metal Promotion and Hydrogen Reduction on Hydroisomerization of n-Hexadecane and Fischer-Tropsch Waxes*, 69 FUEL PROC. TECH. 59-71 (2001)) in view of Yori (J. C. Yori et al., *Isomerization of n-Butane on Pt/SO_4^{2-}-ZrO_2 and Mechanical Mixtures of Pt/Al_2O_3 + SO_4^{2-}-ZrO_2*, 153 J. CATAL. 218-223 (1995).

23. With respect to claims 1-5, Zhang discloses a process for the hydroisomerization of a hydrocarbon feed stream with C_{4+} hydrocarbons cuts (see Zhang, Abstract) comprising contacting the feed under isomerization conditions with a catalyst

composition consisting of zirconium oxide modified with tungsten oxyanion and hydrogenation component of a Group VIII metal (see Zhang, Abstract); wherein the hydrocarbon feed may n-hexadecane (see Zhang, Abstract); wherein the isomerization conditions comprise presence of hydrogen with a hydrogen to hydrocarbon molar ratio between 0.1 to 5 (see Zhang, Table 5), a temperature range from 150°C to 300°C (see Zhang, Table 5), a total pressure of between 1 and 40 bar (see Zhang, Table 5), and a liquid space velocity of between 0.1 to 30 h^{-1} (see Zhang, Table 5); wherein the catalyst composition may comprise 10-50 wt% tungsten oxide (see Zhang, Fig. 1), with a remaining amount comprising zirconia and Group VIII metal (see Zhang, Fig. 1); and wherein the Group VIII metal is platinum and/or palladium in an amount of between 0.01 wt% to 5 wt% (see Zhang, Fig. 1; and page 65).

Zhang does not explicitly disclose wherein the catalyst consists of a mixture of aluminum and zirconium oxides modified with tungsten oxyanion.

However, Yori discloses a platinum-based zirconium oxide catalyst for use in the hydroisomerization of n-butane to produce higher octane species (see Yori, page 218). Yori explains that when a platinum-based aluminum oxide catalyst is mechanically mixed together with the platinum-based zirconium oxide catalyst to form a composite catalyst composition consisting of both aluminum and zirconium oxides, the result is a catalyst composition having increased stability and sustained catalyst activation (see Yori, page 222).

Therefore, the person having ordinary skill in the art of processes for the hydroisomerization of C_{4+} hydrocarbons would have been motivated to incorporate use

of aluminum oxides in the platinum-based zirconium oxide catalyst of Zhang (as taught by Yori) in order to achieve a catalyst composition having increased stability and sustained catalyst activation.

Finally, the person having ordinary skill in the art of processes for the hydroisomerization of C_{4+} hydrocarbons would have had a reasonable expectation of success in incorporating use of aluminum oxides in the catalyst composition of Zhang because: (1) both Zhang and Yori are directed to processes for the hydroisomerization of C_{4+} hydrocarbon feeds; and (2) the catalysts of both Zhang and Yori are zirconium oxide based catalysts modified with tungsten oxyanion.

Response to Arguments

24. Applicant's arguments filed 17 April 2008 have been fully considered but they are not persuasive.

25. Examiner understands Applicant's principal arguments to be:

I. Hollstein's catalyst is in sulfated form and thus "consists" of sulfate which is different than the catalyst claimed by Applicant.

II. Applicant's catalyst consists of oxide mixtures of Group III, IV, and VI metal compounds impregnated with a Group VIII metal, and Hollstein discloses no such catalyst

26. With respect to Applicant's first argument, Examiner notes that the catalyst of Hollstein is sulfated *after* formation of the finished catalyst (see Hollstein, Example 1). Thus, in Examiner's view, the catalyst of Hollstein "consists" of the same constituent

materials as Applicant's catalyst with a sulfate treatment being applied to the *finished* catalyst (i.e. *post*-formation).

27. With respect to Applicant's second argument, Hollstein clearly discloses wherein "[t]he catalysts . . . may also be prepared by co-precipitation of solid hydroxides of (1) Group III or Group IV metals, (2) Group V, Group VI or Group VII metals and (3) Group VIII metals, from aqueous solutions containing compounds of such metals" (see Hollstein, column 3, lines 20-25) and wherein "[m]ixtures of Group III ***and*** Group IV metal oxides or hydroxides . . . may be employed" (see Hollstein, column 3, lines 28-31) (emphasis added).

Conclusion

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 10:00 A.M. to 7:00 P.M. (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB

/Glenn A Caldarola/

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